

CLAIMS

1. A method of constructing a range of shielding articles and the products made as a result of applying the method, included are articles that are able to limit an observers field of view and minimize interference from unwelcome glare, it's reflections or the viewing of extraneous matter, and thus provide a less conspicuous observation function, the method can alternately provide articles that can control the transmission of natural or artificial light from rearward thereof and limit the emitted light to a selected field, desired subject matter or a task in hand, providing a more precisely directed illumination function, yet other articles can also be constructed that utilise the extremely light absorbent quality presented, minimising reflections and providing an effective light absorption function, with all three alternatives utilising components with surfaces that featuring extremely light absorbent textures delicate enough to be impracticable for applications when exposed it to the atmosphere, but are permanently protected by being in intimate contact with a transparent material.

2. A claim as in claim 1 and wherein the light absorbent texture surfaces for maximum concealment will preferably be black or can alternately be any number of colours or hues to suit a location or the surrounding area's ambient light level, they will usually feature as one only or a multiplicity of components, particularly when in relation to transmission functions there through, the light absorbent texture produced as a treatment or coating on thin strips of physical material, who's widths terminate at. or close to the ingress and egress surfaces of the completed shielding article, either being presented at divergent, convergent or inclined at a common angle to suit a required function, but can alternately be produced or presented in a number of other ways, such as a single black layer related principally for absorption functions.

3. A claim as in claim 2 and wherein the transparent material used to physically protect the black components or the alternate colours and hues, shall be either a solid material or alternately a fluid when held captive within a transparent container and will in aggregate comprise, by far a completed shielding article's major component, transparent material can present alternately as a single convoluted layer, an encapsulating material or a multiplicity of transparent components,

the transparent material or the combining transparent components thus used will join together in intimate contact, either between the black components and terminate at the completed articles ingress or egress surfaces, below the surface, extending above on one side of a black component only or extending above both transparent surfaces, the then completed shielding article, being entirely composed of a combination of black and transparent components will provides a contiguous external surface and it's ingress and egress surfaces will often present as piano and parallel, making it suitable for weatherproof and similar applications.

4. A claim as in claim 3 and wherein an observation function will present as a .number of black components usually produced as a treatment or coating on a thin physical material as strips or alternately produced in a number of other ways and who's widths terminate at or close to a 90° (ninety degrees) angle to the ingress and egress surfaces of piano and parallel surfaced transparent components and when subject matter is observed there through at this same angle it will react to the refractive index of the transparent material, (Sneil's Law) and proceed there through exiting the egress surface also at 90°, whereas observation from other directions will alter it's angle in transit, but upon exit will resume the initially observed angle.

5. A claim as in claim 4 and wherein an observation function will present in combination with an illumination function and have both functions applying to the entire shielding article, alternately where observation doesn't apply overall, selected sections may provide an additional level of illumination, usually by providing upper surfaces beyond head height with a reflective finish and tilting them at suitable angles to direct additional light toward interior surfaces to gain maximum diffusion, while the light absorbent lower surfaces remain black on both upper and lower sides.

6. A claim as in claim 3 and wherein an illumination only function will present, when one or a number of black components usually produced as a treatment or coating on a thin physical material as strips or alternately produced in a number of other ways and who's widths terminate at or close to a 90° (ninety degrees) angle to the piano and parallel ingress and egress surfaces of the completed transparent shielding article and when light from rearward thereof, preferably

being presented as a parallel beam also at 90° (ninety degrees), most likely achieved by being suitably focused by being reflected from a point source, enters the ingress surface, then proceed there through and exits the egress surface at the same angle and because light entering from all other angles will not transmit without refraction causing a change in direction; thus light transmitted there through that was refracted at angles that caused it to impinge the- absorbent black surfaces it will fail to emerge allowed only direct passage there through so it will usually only be used where a limited light output is acceptable and when concealing the light source is paramount, articles thus constructed will exhibit extremely good cut off characteristics and would be excellent to highlight specific subject matter within a confined area or be very suitable for near vertical applications, such as in ground mounted, with the absorbent surfaces minimising the area observed.

7. A claim as in claim 3, and wherein one or a number of black components usually produced as a treatment or coating on a thin physical material as piano strips or alternately produced in a number of other ways can be arranged to construct a great many shielding article for natural or artificial light to pass through the combining transparent material from rearward thereof and provide an illumination function, within which ingress and egress transparent surfaces can present as parallel and piano or alternately as non-parallel and piano or with one or both surfaces either providing a continuous surface that for example, may be concave, convex, curved and be either symmetric, non-symmetric or take many other forms, being composed of piano surfaces arranged as cubes or pyramids, or taking the form of spherical, elliptical, ovoid or any of the forgoing used as sectors thereof, alternatively either surface can be divided into a number of separately angled sections and where a continuous curvatures such as when a convex piano lens is divided into a number circular sections and abut at distances that allow the stepped junction to reduce mass while still fulfilling the original curvature's focusing function, with neighbouring transparent section separated by black components matching the angle assumed upon ingress or an infinite number of other shapes possible and wherein at such junctions, thin and preferably black components are suitably spaced and at angles required to provide a specific shielding function, with the black component terminating at or close to the ingress and egress surfaces, or alternately portion extending beyond the surface at a junction of neighbouring transparent and

assuming the egress angle upon exit and ideally for the most efficient transmission, match the angle that is assumed upon ingress, imposed by the refractive index of the particular transparent medium employed with the one exception of light incident at 90° (ninety degrees) and when the entry and transmission angles remain common and provide identical performance to transmission through air, the articles thus incorporating such light absorbent shielding, can control and conceal directed light previously impossible, in permanently protected articles incorporating extremely efficient concealment.

8. A claim as in claim 7 and where in addition to the use of black in constructing articles for illumination functions, that utilise it's extremely light absorbent qualities to limit and control the directions of natural or artificial light entering from the rear thereof and thus improve conditions for viewing a desired scene, one or a number of reflective surfaces are added, preferably being mirror, with their introduction full advantage can be taken of a mirror's ability to reflect precisely in any number of directions simultaneously, this allows the mirror surfaces to be arranged at angles that provide reflections of nearby black surfaces, being observed from within the normal field of view while reflecting additional light in desirable directions, or in many configurations to restrict illumination to extremely limited target areas, the combination can't provide the excellent absorption that black only articles can, but when angles can be arranged for light to be absorbed first in a black surface and the extremely small amount reflected is then presented to a second and mirror surface or alternately in the reverse order, from within the normal field of view, in all but the lowest ambient light levels it will difficult to notice the difference between this arrangement and a black only article, and where the shielding article is out of sight It will be much preferred for the extra light provided.

9. A claim as in claim 2 and wherein articles are constructed to provide an illumination function with light transmitting through air (open to the atmosphere) this is achieved when light absorbent textured surfaces that for maximum concealment will preferably be black, but can present as alternative colours and hues, they can be presented on thin piano sheet material either as narrow strips or on a variety of other solid shapes, presenting either on a single surface or overall, and when covered with a relatively thin layer of transparent material, that is never the less thick

enough to provide it's light absorbent and easily damaged delicate texture with a smooth and glossy surface that protects it permanently from deterioration when exposed to the atmosphere, the thus protected surfaces when a single component is convoluted or otherwise shaped, or a multiplicity are spaced apart with their width's defining the completed article's ingress and egress surfaces, allowing the thus created gaps, passageways or multi sided cells so created to featuring a wide range of angles being either all parallel at 90° (ninety degrees) to the completed article's transmission extremities, all inclined at a common angle or being convergent, divergent or a mixture thereof and allowing the creation of many forms, with the individual components thus assembled, providing easy and smooth surfaces to clean and maintain.

10. A claim as in claim 9 and where in addition to the advantages of providing more serviceable articles with permanently protected, extremely light absorbent black textures, the smooth and gloss external transparent material can be oriented to reflect additional light off it's specular surface, acting in the fashion of a mirror at many angles, while those same angles can present to an observer, either the side doing the reflecting or the reverse side, both from within the normal field of view, and provide a view through the transparent layer that presents a black surface with little if any interruption, a shielding article attached to a longitudinal luminaire, can be mounted parallel to an art gallery wall and achieve a similar result with the light source unseen except unless one stands with their back against the wall displaying the pictures, in many such cases surfaces facing the wall or in many other locations, may alternately feature a mirror surface, further increasing the light output, the same light increase will also assist in distributing output from fixtures out of sight in sconces or other concealed locations, such installations can have their black transparent covered specular and/or mirror surfaces arranged to limit light output directed toward nearby diffusing surfaces and increase the light reflected further away, thus without a high level of light displayed a viewer may be unaware that a light is even switch on

11. A claim as in claim 1 and wherein shielding articles can be constructed that minimise the reflection of light, providing a light absorption function, achieved by utilising components that preferably are black, with surfaces that featuring extremely light absorbent textures, they will usually present on one side only of piano sheet material as a coating, anodising, electro-plating or

one of many other ways, the resulting texture would be impracticable when exposed to the atmosphere for cleaning and maintenance, this disclosure makes it's use possible by applying a relatively thin layer of transparent material, that is never the less thick enough to provide it's easily damaged texture with a smooth and glossy surface that protects it permanently from deterioration and damage, when exposed to the atmosphere, an alternate presentation could have the both components co-extruded and as many products will require the assembly of a number of piano parts to present a completed article, co-extruded material may be subsequently thermo formed to the required multifaceted final shape as an alternative to fabricating many single surfaced light absorbent articles from a number of individual piano sheets.

12. A claim as in claim 11 and* wherein shielding articles can be constructed in a similar manner to articles providing a light absorption function, now in addition the thin sheet material, the light absorbent black surface can alternately present on thicker material with either way able to incorporate a variety of configured shapes, such as a corrugated surface that will need only a thin sheet or when a multiplicity of inverted pyramids providing recessed triangular shapes and require a more substantial thickness, in both examples the opportunity to provide mirror surfaces concealed from a viewing position, with some of the triangles remaining black and with the corrugated surface providing alternating stripes of mirror and black, the mirror sectors, will not only see incoming glare, such as sunlight dispersed, as this is only the visible part of the spectrum, but a wider field including Infrared and Ultra Violet, so heat can also be reflected, above such convoluted black and mirror combined surfaces will be a piano surface of transparent material with the entire space between totally occupied, this smooth and glossy specular and transparent surface could be installed as a vehicle dashboard, and so a driver and front seat passenger will not receive devastating reflections, from the smooth and glossy specular surface, ahead of the dashboard a relatively narrow light absorbent panel is installed and arranged at an acute angle so that whether viewing either the dashboard or the absorbent panel, it only presents a reflection of the other, consequently no glare.

13. A method of constructing a range of shielding articles as in claim 2 and the products made as a result of applying the method, included are articles that are able to provide an illumination

function by providing articles that can control the transmission of natural or artificial light from rearward thereof and limit the emitted light to a selected field, desired subject matter or a task in hand, providing a more precisely directed illumination function, the method provides its primary advantage by configuring one or a multiplicity of physical components that present as a treatment or coating that will preferably be black but can alternately be any number of colours or hues to suit a location or the surrounding area's ambient light level, the black components will usually but not necessarily combine with an equal quantity of components featuring a reflective surface, preferably being mirror and in most applications, on thin strips of physical material spaced apart at calculated distances, with a black texture and a mirror surface either featuring on opposite sides of a single component or two black surfaces on one component, used in conjunction with two mirror surfaces on another and where used in the one complete shielding article they will be positioned to always present a black surface facing mirror surface across an air gap (open to the atmosphere), which due to cleaning and maintenance considerations the black surfaces being exposed to the atmosphere will present serviceable textures no more light absorbent than a satin will be used, the thus created gaps, passageways or multi sided cells so created can feature a wide range of angles being either all parallel at 90° (ninety degrees) to either being presented all inclined at some other common angle or being convergent, divergent or a mixture thereof and allowing the creation of many forms to suit a required function, their widths defining the completed article's ingress and egress extremities,

14. A claim as in claim 13, and wherein a shielding article so constructed, it provides light shielding for a luminaire known as an "Egg Crate" designed to accommodate linear fluorescent tubes, it can utilise the mirror surfaces that face the black surfaces across the gaps, passageway or cells that are all open to atmosphere, to present a far greater light output than similar shaped and configured arrangements in which all surfaces are a black satin texture, the mirror surface is able to reflect in any number of directions unseen by an observer within the normal field of view, while simultaneously presenting the observer a reflection of the satin surface, encapsulated within are a number of thin strips that lie in substantially vertical planes, the strips running parallel to the tubes are coated and present with an extremely light absorbent black texture, while two other mirror surfaced sets of strips each join transversally each at 60° (sixty degree) thus

presenting a multiplicity of triangular cells, this results in a greater distribution of light in a longitudinal direction and when the widths of the strips are sufficiently wide it only allows viewing a black surface direct or a reflection of black in a mirror surface.

15. A claim as in claim 3 and wherein a shielding article is constructed, to provide a light shielding function, that from within the normal field of view it would appear to be switched on, it takes the form of a transparent piano and parallel rectangular panel that is surface mounted or flush with the ceiling beneath a linear light source such as a number of fluorescent tubes, being positioned parallel to a wall that could be used to display graphic art works, encapsulated within are a number of thin strips that lie in substantially vertical planes, the strips running parallel to the tubes are coated and present with an extremely light absorbent black texture, while two other mirror surfaced sets of strips each join transversally each at 60° (sixty degrees) thus presenting a multiplicity of triangular cells, this results in a greater distribution of light in a longitudinal direction and when the widths of the strips are sufficiently wide it only allows viewing a black surface direct or a reflection of black in a mirror surface.

16. A claim as in claim 3 and wherein a shielding article is constructed to provide Sun Glasses, the lenses both incorporate a number of spaced apart horizontal extremely light absorbent thin black strips the transparent material in which they are embedded will be by far the major component and the spacing will be determined by what extent of a vertical field is required, the transparent material can either be perfectly clear if they are for use around the clock, with no reduction of the light level presented or can be tinted for daylight use only.

17. A claim as in claim 3 and wherein a shielding article is constructed to provide light shielding to fulfil a wall washing function; it is in the form of a transparent piano and parallel rectangular panel that is surface mounted or flush with the ceiling beneath a linear light source such as a number of fluorescent tubes, being positioned parallel to a wall that could be used to display graphic art works, within the rectangular frame are presented a number of vertically mounted strips with half mounted at a 45° (forty five degree) angle to the tubes mounting angle and the rest at a 45° angle in the other direction, the result being a multiplicity of square shaped

cells, the strips presented on the wall facing side are all reflective and preferably mirror, while their reverse side all are provided with an extremely light absorbent black texture which has been covered with a relatively thin layer of a transparent material that is never the less still thick enough to provide it with a smooth and glossy specular surface that will act as a mirror and reflect light downwards at sharp angles, but when viewed from within the normal field of view the transparent material allows a viewer to see through the surface and observe the black surface beneath, this only presents a view of the tubes if viewed with your back to the wall.

18. A claim as in claim 3 and wherein shielding articles is constructed to provide a cover for a waterproof Pool Light that remains unseen from around the pool except for ripples on a disturbed surface, the lighting fixture will be wall mounted in a near vertical position that is below the pools completely filled water level and within a transparent sealing article are encapsulated a number of horizontally positioned extremely light absorbent black piano thin strips, they are inclined at an angle that refraction prevents light leaving the shield at an angle that when combined with the refraction of the water will prevent any light leaving the light at an angle that penetrates the surface, so it won't annoy people at poolside and it will only be observed if you dive beneath the surface. ABSTRACT Shielding articles suitable for vision there through, illumination emerging there from or a combination of both functions are constructed by combining an opaque extremely light absorbent coating or treatment, preferably black, being applied to a thin sheet material usually as narrow strips who's widths extend to or near the ingress and egress surfaces of a considerably thicker transparent component that seals and protects the delicate and easily damaged coating, allowing applications that only articles with a continuous external surface could provide, which far all observation applications will require piano and parallel surfaces, said material's refractive properties provide angles and other shapes at exterior surfaces in addition to piano surfaces, with any external shape being also able to utilise internally angled opaque components to change directions during transmission related to illumination, the addition of a second opaque component, namely a mirror surface, provides two further means for illumination, one allows a thin but externally smooth and glossy layer of transparent material to provide a specular and reflective surface open to the atmosphere to still employ a light absorbent quality that if not reflecting to an observer, still absorbs impinging light while reflecting useful

extra light at sharper angles, while the other can still take advantage of a mirror's advantage all be it at the expense of a less concealing black surface, usually not more light absorbent than a satin texture, while in non transmitting applications, one layer of absorbent material beneath a transparent layer can be used to absorb light only, and when mirror sectors combine, a reflective function is added.